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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/022,362	12/20/2001	Minoru Teshima	Q67642	3575

7590

08/27/2003

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EXAMINER

DOVE, TRACY MAE

ART UNIT

PAPER NUMBER

1745

DATE MAILED: 08/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/022,362

Applicant(s)

TESHIMA ET AL.

Examiner

Tracy Dove

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

The information disclosure statements (IDS) submitted on 3/21/02 and 6/24/02 have been considered by the examiner.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al., JP 11-339849 in view of Perton et al., US 5,472,809.

A machine translation of the Japanese document was obtained from the Japanese Patent Office web site and is attached.

Suzuki teaches an electrolyte for a non-aqueous secondary battery containing an organic solvent and a solute (abstract). The battery comprising a carbonaceous material as a negative electrode material and a separator (0015 and 0018). The organic solvent contains at least one compound having the structure shown by the formula ( I ), such as phenyl vinylene carbonate (phenylethylene carbonate) (abstract), contained in an amount of 0.05-40 wt%, preferably 0.1-20 wt% of the organic solvent. The organic solvent may further contain ethylene carbonate,

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propylene carbonate, dimethyl carbonate, diethyl carbonate, ethyl methyl carbonate or mixtures thereof (0011). Suzuki teaches a solvent mixture comprising phenyl vinylene carbonate, ethylene carbonate, propylene carbonate and ethyl methyl carbonate (chain carbonate). The phenyl vinylene carbonate is dissolved in a 1:1:1 volume ratio mixture of ethylene carbonate, propylene carbonate and ethyl methyl carbonate (0020). Suzuki teaches chain carbonates such as dimethyl carbonate, diethyl carbonate, ethyl methyl carbonate may be used for the organic solvent.

Suzuki does not explicitly teach the chain carbonate is contained in an amount of 50-90% by volume.

However, Perton teaches a non-aqueous secondary battery comprising an electrolyte solvent mixture made up of:

5% to 40% by volume of propylene carbonate;

10% to 20% by volume of ethylene carbonate; and

50% to 85% by volume of dimethyl carbonate (chain carbonate).

See abstract. A preferred mixture comprises 20 vol% propylene carbonate, 20 vol% ethylene carbonate and 60 vol% dimethyl carbonate. Another preferred mixture comprises 15 vol% propylene carbonate, 15 vol% ethylene carbonate and 70 vol% dimethyl carbonate (col. 2, lines 4-18).

Therefore, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because one of skill would have been motivated to use the solvent mixture of Perton for the organic solvent containing phenyl vinylene carbonate of Suzuki because Suzuki discloses a phenyl vinylene carbonate is added to a solvent mixture

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containing ethylene carbonate, propylene carbonate and a chain carbonate. One of skill would be motivated to use the solvent mixture of Perton in Suzuki to improve performance at low temperature, to improve cycling efficiency and to improve the stability of the electrolyte (see Perton col. 1, lines 43-56). One of skill would be motivated to combine the teachings of Suzuki and Perton because both references are directed toward non-aqueous secondary batteries comprising an electrolyte including a mixture of organic solvents.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sekino (US2002/0164531) teaches a nonaqueous electrolyte for a nonaqueous secondary battery. The nonaqueous electrolyte comprising an organic solvent mixture which contains 15-50 vol% of ethylene carbonate, 2-35 vol% of propylene carbonate, 30-85 vol% of butyrolactone and 0-5 vol% of a fourth component such as phenylethylene carbonate. See abstract and 0128. Butyrolactone is not a chain carbonate.

Suzuki (JP09-022722) teaches a nonaqueous electrolyte containing a solvent mixture including a carbonate solvent having a phenyl radical.

Funatsu (US5478673) and Spillman (US6245464) each teach a non-aqueous electrolyte solvent having mixtures of organic carbonate solvents.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is (703) 308-8821. The Examiner may normally be reached Monday-Thursday (9:00 AM-7:30 PM). My supervisor is Pat Ryan, who can be reached at (703) 308-2383. The Art Unit receptionist can be reached at

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(703) 308-0661 and the official fax numbers are 703-872-9310 (after non-final) and 703-872-9311 (after final).

 8/03

Tracy Dove  
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